TALL BUILDING ESCAPE APPARATUS

FIELD OF THE INVENTION

The present invention relates to a tall building escape apparatus and particularly to an escape apparatus to provide rapid escape without using power equipment.

BACKGROUND OF THE INVENTION

Public building has to provide fire fighting and escape facilities. The most commonly used escape facility is the slow descending apparatus which includes a hanging rack fixedly installed on each floor of the building and a slow descending device located nearby. In the event of fire breaking, the slow descending device is hung on the hanging rack, and a loop strap of the slow descending device is hitched on the user. The user may descend slowly to the ground floor by means of user's own weight from the high rise building.

However such a slow descending apparatus has drawbacks, such as the escape speed is slow, poor safety, and has limitation on the applicable height. Details of these drawbacks are elaborated as follow:

1. Slow escape speed:

When the user has descended on the ground floor, the loop strap has to be rewound to enable the next user to descend. Not only the descending speed is slow, the winding of the loop strap is a waste of time.

2. Poor safety:

During descending, the user is hitched by the loop strap and hanged in a suspended manner in the air without any traction in the surrounding. The user tends to dangle or swivel under external forces.

3. Limitation of applicable height:

Because of the potential risks mentioned above, it is suitable only in the low or medium height floors.

SUMMARY OF THE INVENTION

In view of the aforesaid disadvantages, the invention aims to provide a tall building escape apparatus that can provide rapid escape without using power equipment. The escape apparatus according to the invention includes two escape exits on one side of a building and two upright sliding rails abutting the escape exits. The sliding rails are cylindrical rods extended from the ground floor to the top floor of the building. There are hanging racks on the top floor corresponding to the sliding rails. There are pulleys fixedly mounted on the hanging racks to wind a rope. The rope has two ends each is fastened to an escape case. The escape case has retaining wheels that have a curved periphery to clamp the sliding rail. The bottom side of the escape case has buffer members. There is an entrance/exit opening located on one side of the escape case directing to the escape exit. When a user descends through one escape case, another escape case is lifted by the rope at the same time to enable another user to escape. Thus

not only escape speed is faster, safety is enhanced, and there is not applicable height limitation.

By means of the structure set forth above, the invention can provide the following advantages:

1. Faster escape:

As there are two sets of pulleys located on the top floor of the building to wind the rope, and two escape cases are fastened to two ends of the rope, when one escape case is descended to convey an user, the rope pulls another escape case upwards at the same time to enable another user to escape. There is no waiting or waste of time.

2. Greater safety:

The escape case slides downwards along the sliding rails, and the bottom side of the escape case has buffer members to provide cushion so that users may be prevented from injury when the escape case drops to the ground floor.

3. No height limitation:

The two escape cases are linked by the rope and slide along the sliding rails, hence they may be used securely without height limitation. Moreover, descending and lifting of the escape cases are steadier.

The foregoing, as well as additional objects, features and advantages of the invention will be more readily apparent

from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of the present invention.

FIG. 2 is a side view of the present invention.

FIG. 3 is a top view of the present invention.

FIG. 4 is a cross section of the escape case of the invention.

FIG. 5 is a fragmentary cross section of the brake device of the invention.

FIG. 6 is a schematic view of an embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Please referring to FIGS. 1, 2 and 3, the tall building escape apparatus according to the invention includes at least two escape exits on each floor of a building 10 that may be escape doors 11, or escape windows or balconies. The drawings show the escape doors 11 as an example. On one side of the escape door 11, there are two upright and parallel sliding rails 23 that are extended from the ground floor to the top floor of the building 10. The sliding rails 23 are cylindrical rods. The top floor of the building 10 has two hanging racks 20 on the edge corresponding to the sliding rails 23 that are extended outside the edge of the building 10. The bottom side of the hanging rack has two pulleys 21 fastened thereon in a front and a rear manner. The pulleys 21

at the front side are wound by a rope 22. The pulleys 21 at the rear side also are wound by another rope 22. The rope 22 winds the pulleys 21 at least one time. The rope 22 has two ends fastened respectively the two escape cases 30.

Referring to FIG. 4, the escape case 30 has a plurality pairs of retaining rollers 33 which have a curved periphery to clamp the cylindrical sliding rail 33 without moving away. The bottom side of the escape case 30 has buffer members 36 for damping purpose. In the drawings, the buffer members 36 are springs. The escape case 30 is hollow and has an entrance/exit opening 31 directing to the escape door 11. The bottom edge of the entrance/exit opening 31 is extended to form an extension board 32. Referring to FIG. 5, the escape case 30 further has at least two brake devices 34 and 35 each has a pivotal clamp member 341 and 351 facing one side of the sliding rail 23. The clamp member 341 and 351 have respectively an outer end attached to a braking pad 342 and 352 to clamp the sliding rail 23, and an inner end bridged by an elastic member 343 and 353 to keep the braking pads 342 and 352 compressing the sliding rail 23 constantly. When the inner end of the clamp member 341 is subjected to a clamping force, the outer end may be extended to make the braking pad 342 moving away from the sliding rail 23 to release the compression. One inner end of the clamp member 351 of one brake device 35 has a brake line 354 which is connected to a

pedal 355. When the pedal 355 is stepped and depressed, the outer ends of the clamp member 351 are extended to release the braking pad 352 from compressing the sliding rail 23.

Referring to FIG. 6, when in use, people on each floor of the building 10 may enter the escape case 30 through the escape door 11 and the extension board 32. Once entered the escape case, user can use hands to extend the outer ends of the brake device 34 and use one foot to step the pedal 355 of another brake device 35 to extend the outer ends of the clamp member 351 so that the two braking pads 342 and 352 of the brake devices 34 and 35 are no longer compressing the sliding rail 23, and the escape case 30 may slide downwards. During descending, user can control the sliding speed of the escape case 30 through the brake devices 34 and 35. When the escape case 30 drops to the ground floor, the buffer members 36 provide a damping and shock absorbing effect to prevent the user from injury. Meanwhile, another escape case 30 is pulled by the rope 22 and lifted upwards to enable another user to escape rapidly.